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JOINT VISION 2010, PRIORITY OF EFFORT AND AIRSPACE MANAGEMENT: THE LONG POLE IN THE TENT

By

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The comments of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract of

***JOINT VISION 2010, PRIORITY OF EFFORT AND AIRSPACE MANAGEMENT:
THE LONG POLE IN THE TENT***

Integration of the new operational concepts described in Joint Vision 2010 requires an evaluation of the current joint doctrine and airspace management command and control architecture. Because Joint Vision 2010 operational concepts are dependent upon airborne platforms, both a fully integrated and interoperable airspace management system capable of tracking all airborne systems and a coherent joint doctrine that allows the joint force staff to rapidly prioritize airspace use are required to support 2010 joint operations.

Aviation is the primary operational fire support asset of the joint force, consequently the JFACC enjoys a special relationship with the joint force commander. Joint force fires coordination involves the integration of component or service capabilities across the full spectrum of air, land and sea forces. Apportioning fire support assets to the component commanders to service their priorities facilitates precision engagement. Assigning the J-3 or a joint fires element responsibility for developing the joint integrated prioritized target list will ensure that each component commander's priorities are more appropriately ranked.

Joint Vision 2010 operations will require unrestricted access to information about enemy and friendly forces. Building service or component airspace command and control systems that provide the necessary level of detail on all friendly and enemy airborne platforms will be very expensive, but must become an acquisition priority if *Joint Vision 2010* operational concepts are to become reality.

Introduction

Integration of the new operational concepts described in *Joint Vision 2010* requires an evaluation of the current joint doctrine and airspace management command and control architecture. Currently, the focus of airspace management in a theater of operations centers on coordination of operational fires, joint air defense and theater missile defense. Joint Force Commanders must prioritize joint force fires and promulgate airspace control measures to deconflict the multiple uses of the airspace. However, prioritization of operational fires and airspace management in the joint area of operations is normally provided by the Joint Forces Air Component Commander (JFACC) through service and functional components.

Joint Vision 2010 espouses four new operational concepts to achieve full spectrum dominance: dominant maneuver, precision engagement, full dimensional protection and focused logistics. Each concept is dependent upon airborne systems to take advantage of emerging technologies. Competition for freedom of action in the airspace will be fierce between service components and/or functional components. Providing separation between airborne delivery platforms will become increasingly complex. More importantly, integration of service capabilities to achieve common tactical and operational objectives is required to fully exploit the goals of *Joint Vision 2010*. Arguably, airspace management and priority of effort will become the two most contentious issues during joint operations as *Joint Vision 2010* ideas become actual joint force capabilities.

There are three areas of concern which are pivotal to *Joint Vision 2010* operations and require critical analysis. One concern is the process for prioritizing and servicing corps level targets. A second concern is joint doctrine for airspace management. Coherent joint doctrine that allows the joint force staff to rapidly prioritize fire support and airspace use is essential

to ensure all components can accomplish their mission and that the joint force commander's intent and priorities are met. The third concern is interoperability of the command, control, communication, computers and intelligence (C⁴I) systems. Attainment of *Joint Vision 2010* operational concepts requires a fully integrated and interoperable airspace management system capable of tracking all airborne systems

The thesis of this paper will be developed by discussing and analyzing current and evolving joint doctrine for joint operational fires and the command and control systems and joint doctrine for airspace management with regard for *Joint Vision 2010* operational concepts. There are two goals of this research. The first is to determine if the evolving joint doctrine and airspace command and control systems will provide the doctrine and equip a joint force that can fully exploit the goals of *Joint Vision 2010*. The second goal is to recommend changes to the evolving doctrine and identify areas where emerging technology can be exploited.

Background

Joint Publication 3-56.1, *Command and Control for Joint Air Operations*, dated 14 November 1994, and Joint Publication 3-52, *Doctrine for Joint Airspace Control in the Combat Zone*, dated 22 July 1995, provide current joint doctrine for conducting joint air operations and controlling joint airspace. Current joint doctrine hinges on the idea that the bulk of operational fires for the joint force commander are provided by aviation. Moreover, current joint doctrine for airspace management centers on deconfliction of aircraft with air defense weapons and surface to surface systems. Emerging joint doctrine for the integration of all operational fires including long range surface to surface systems, special operations forces and aviation is currently being developed. The final coordination draft of Joint

Publication 3-09, *Doctrine for Joint Fire Support*, is being reviewed and should be issued by summer of 1998. *Joint Vision 2010* describes four new operational concepts which either current or evolving joint doctrine and emerging technologies must make possible.

Joint doctrine promotes the JFACC concept and the idea that responsibility for prioritization of joint operational fires, air defense effort and supporting airspace management should be assigned to the JFACC. Although joint doctrine allows joint force commanders to tailor their organizations to fit the situation, the JFACC concept described in current joint doctrine is the normal organization established to conduct joint air operations. Specific JFACC responsibilities include, but are not limited to, the planning, coordination, allocation, and tasking of joint air operations based upon the joint force commander's concept of operations and air apportionment decision. Additionally, "The responsibilities of the JFACC, airspace control authority and area air defense commander are interrelated and should normally be assigned to one individual. The functions and responsibilities of the JFACC, airspace control authority, and area air defense commander must be integrated in order to unite joint air operations with joint airspace control and joint air defense operations in support of the joint force commander's campaign. Designating one component commander as JFACC, airspace control authority and area air defense commander may simplify coordination required to develop and execute fully integrated joint air operations."¹

Joint Vision 2010 touts the role of information and related technology as central to realizing the full potential of the four new operational concepts; dominant maneuver, precision engagement, focused logistics and full dimensional protection. *Joint Vision 2010* operations will require unrestricted access to information on enemy and friendly forces. The

¹ U.S. Joint Chiefs of Staff. Command and Control for Joint Air Operations. Joint Publication 3-56.1 Washington, D.C.:1994, II-4 -II-5.

idea is that information superiority will enable our forces to take advantage of the full array of their capabilities, and is a fundamental precondition for successful 2010 operations. The joint force commander will have the ability to initiate decisive operations across the range of military operations to attain full spectrum dominance. Implied in the new operational concepts is that the role of airborne platforms will be pivotal to successful 2010 operations. A dramatic increase in manned and unmanned airborne platforms will be competing for use of the same airspace.

In order to capitalize on information age technologies it will be necessary to move away from traditional notions about command, organizational design and the conduct of airspace management. A careful evaluation of joint doctrine and airspace management in relation to the emerging operational concepts is required to ensure that there is an integrated development of the command and control systems across the force.

Analysis

General John J. Sheehan, while Commander in Chief United States Atlantic Command, defined the evolution of joint operations at three levels: specialized joint, synergistic joint and coherent joint. Specialized joint operations are characterized by multi-service, multi-dimensional and multi-functional operations that are driven by a common operational objective. Operation Desert Storm is an example of a specialized joint operation where deeply redundant and separate services were fighting in the same battlespace. Service capabilities were deconflicted rather than integrated. Coherent joint operations, on the other hand, are characterized by joint force commanders integrating service capabilities to achieve common tactical and operational objectives while accommodating the natural battle rhythms and cycles of land, sea and air warfare. Joint force integration requires the complete

interoperability of weapons as well as command, control communications, computers, intelligence, surveillance and reconnaissance (C⁴ISR) systems. Smaller forces must leverage technology to reduce unnecessary and burdensome command layers, improving joint force integration.² The development of coherent joint doctrine that not only allows component commanders to establish priority of fires but also apportions the fire support assets and airspace to prosecute those targets will ensure the leveraging of emerging technologies to achieve *Joint Vision 2010*.

Following is an analysis of the areas discussed above. The analyses are presented in three parts: (1) joint doctrine and prioritization of fires, (2) joint doctrine for airspace control and, (3) supporting C⁴I systems for airspace control. The focus of each analysis will be on that area's strength of support of *Joint Vision 2010* operational concepts.

Priority of fires

The joint commander's staff, specifically the J-3, must become more involved with integrating the efforts of service or functional components. Perhaps the most important area in which the J-3 must integrate component efforts is the application of fires. Fire support coordination is required at all levels of the joint force. Joint force fires coordination involves the integration of component or service capabilities across the full spectrum of air, land and sea forces.³ With regard to joint fire coordination the command and control system is decentralized control and decentralized execution because the joint force commander will normally delegate the authority to conduct joint air targeting execution planning,

² Sheehan, John J. "Next Steps in Joint Force Integration." *Joint Force Quarterly*, Autumn 1996, 42.

³ Fern, William R. *Joint Fires Coordination: Towards a Joint Force Answer*. Newport RI: Naval War College, 1997, 78.

coordination, and deconfliction to the JFACC.⁴ This is the primary weakness of current joint doctrine.

On the surface the JFACC concept appears to support joint operations very well, given that aircraft operations constitute the preponderance of airspace use. At the heart of establishing priority of effort for air operations and the bulk of joint operational fires is the apportionment process. The process begins with the JFACC proposing apportionment to the joint force commander by percentage and/or priority that should be devoted to various air operations and/or geographic locations. The joint force commander then approves apportionment, usually specified in terms of percentages allotted between anti-air warfare, close air support and air interdiction. Air apportionment is intended to allow the joint force commander to ensure that the weight of the joint air effort is consistent with his objectives.⁵

The JFACC then develops the joint air operation plans to employ available capabilities/forces. The end product is a prioritized list of targets that support the objectives and conform to the guidance called the joint integrated prioritized target list (JIPTL). The JIPTL is a planning tool developed by the JFACC with input from the other components and approved by the joint force commander. It is used to maintain a prioritized list of targets and associated data. All potential targets are processed through the joint air operations center (JAOC) (Combat Plans) which identifies, prioritizes, and selects specific targets that meet the joint force commander's objectives and guidance.⁶

⁴ Fern, William R. Joint Fires Coordination: Towards a Joint Force Answer. Newport RI: Naval War College, 1997, 54.

⁵ U.S. Joint Chiefs of Staff. Command and Control for Joint Air Operations. Joint Publication 3-56.1 Washington, D.C.:1994, IV-5—IV-6.

⁶ *Ibid.*, IV-7—IV-8.

Because the JFACC develops the JIPTL, he is, in effect, establishing priority of fires in the other component commanders' areas of operations. Although the components provide liaison teams to integrate and coordinate their participation in joint air targeting and operations, in this process the other component commanders' priorities are usually ranked behind JFACC established priorities. As long as the JFACC integrates, deconflicts, prioritizes, and synchronizes the nominated targets, and allocates and matches air capabilities/forces against the targets, the other component commanders must compete with the joint force commander's priorities established by the JFACC.

The Army and, to a lesser extent, the Navy and the Marine Corps have expressed several criticisms of the JFACC concept that focus on joint fire support control and fire support prioritization. Because aviation is the primary operational fire support asset of the joint force, the JFACC enjoys a special relationship with the joint force commander. However, the JFACC has some limitations regarding control of all joint fires resources (e.g., TLAM, ATACMS) and awareness of special operations and non-lethal strategies, thus an opportunity may exist to neglect consideration of all joint fires aspects during development of the air plan. Yet the JFACC continues to hold an elevated position in relation to the other components with regard to operational fire support prioritization and execution.⁷ It is this elevated position with regard to prioritizing operational fires that is at the heart of the other service and functional components' dissention.

Some argue that the joint force commander can augment the JFACC organization with personnel and liaison elements from the other services to make it joint. However, joint doctrine advocates the idea of assigning a service component commander the dual role as a

⁷ Fern, William R. Joint Fires Coordination: Towards a Joint Force Answer. Newport RI: Naval War College, 1997, 12-14.

functional component commander. "The joint force commander should normally designate a JFACC from the component that has the preponderance of air assets in the joint operations area and the capability to command and control joint air operations."⁸ In this case, the JFACC will be a service component commander who will dominate the operational fire support planning and execution for the joint force directing fire support assets from the other components.

Further argument is made that the establishment of the joint targeting coordination board (JTCCB) provides a venue for the other components to voice concerns about target priorities. The idea is that the joint targeting coordination board is augmented with members from each component, maintains a macro view of the joint area of responsibility and ensures targeting priorities are consistent with those of the joint force commander. Although the joint targeting coordination board can help reconcile conflicting component priorities, it fails to address the process that does not support component commanders in their area of operations.

Another argument that is often raised is that the process is not broken. The thought is that the JFACC concept in conjunction with the joint targeting coordination board was proven during Operation Desert Storm. However, during Operation Desert Storm deeply redundant and separate services were fighting in the same battlespace. To achieve *Joint Vision 2010* smaller forces must leverage technology to conduct coherent integrated joint operations with complete interoperability of weapons as well as C⁴ISR systems.

The final coordination draft of Joint Publication 3-09, *Doctrine for Joint Fire Support*, allows for the establishment of a joint fires element (JFE) to provide

⁸ U.S. Joint Chiefs of Staff. Command and Control for Joint Air Operations. Joint Publication 3-56.1 Washington, D.C.:1994, II-2.

recommendations to the J-3 to accomplish fires planning and coordination.⁹ The final coordination draft also provides several principles for coordinating joint fire support that attempt to strike a balance between centralized command and decentralized execution. During November 1996 the Joint Warfighting Center completed a detailed study of the joint force fires coordinator (JFFC) concept in order to provide a recommendation to the Chairman of the Joint Chiefs of Staff regarding the concept. The JFE was recommended as a compromise between competing service concepts. The Joint Warfighting Center concluded that the concept is a viable joint force commander's staff option and the title of the cell is unimportant, but that descriptions of functions and tasks and where they are performed are central to the concept's utility.¹⁰

Unfortunately, the JFE prescribed in the final coordination draft of Joint Publication 3-09, *Doctrine for Joint Fire Support*, falls short in establishing fire integration at the joint staff level. Although components develop and nominate targets that are outside their area of operations or exceed the capabilities of organic and supporting assets, still the JFACC is responsible for developing the JIPTL.

In order to correct this situation and develop coherent joint doctrine that will support 2010 operations, three changes to the current doctrine are required. First, fire support assets must be apportioned to the component commanders to service their priorities. Central to the concept of precision engagement is the ability to rapidly select and combine the right forces and engage the objective. Apportioning fire support assets to the component commanders to service their priorities facilitates precision engagement. Central to apportioning fire support

⁹ U.S. Joint Chiefs of Staff. Doctrine for Joint Fire Support, Final Coordination Draft. Washington, D.C. 23 December 1997, I-6.

¹⁰ Joint Warfighting Center. JWFC JFFC Study. Norfolk VA: 1997, EX-5.

assets will be the proper ranking of component priorities which requires a second change to joint doctrine and concerns the agency tasked with developing the JIPTL.

The J-3 or the JFE is the more appropriate location for developing the JIPTL. "The J-3 (or JFE) serves as the joint force commander's principal staff advisor for the coordination, integration, and synchronization of joint fires with other major elements of the campaign/operation such as maneuver, information operations, special operations and logistics."¹¹ Assigning responsibility for developing the JIPTL to the J-3 or JFE enables the joint force commander to ensure that each component commander's priorities are more appropriately ranked. The third required change in joint doctrine involves airspace assignment.

Airspace management doctrine

Battlespace management and its subset, airspace management, are very complicated and will become more so for the joint force commander in 2010. Of great concern will be ensuring unity of command and unity of effort for widely dispersed elements to bring massed effects against enemy decisive points and centers of gravity. Invariably the responsibility for specific slices of airspace is based upon ownership. Currently, centralized airspace management is provided by the JFACC. Whether the joint operations area is divided among service components or functional components, each component has an assigned "battlespace" or operating area that includes airspace and the responsibility for managing that assigned airspace.

As the airspace control authority, the JFACC is responsible for developing, coordinating, and publishing airspace control procedures and for operating the airspace

¹¹ U.S. Joint Chiefs of Staff. Doctrine for Joint Fire Support, Final Coordination Draft. Washington, D.C. 23 December 1997, I-5.

control system in the area of operations. Methods to accomplish this deconfliction, coordination, and integration vary throughout the range of military operations. The control procedures range from full positive control of all air assets in an airspace control area to full procedural control of all such assets, with any effective combination of positive and procedural control between the two extremes. Full positive control would rely on radar, other sensors and other elements of the air defense network C⁴I system to positively identify, track, and direct air assets. Full procedural control would rely on previously agreed to and promulgated air space control measures such as comprehensive air defense identification procedures, fire support coordination measures and coordinating altitudes. Command and control centers rely on pilot position reports to track missions and deconflict other missions or to integrate surface fire support systems with aircraft attacks. The air control authority promulgates an air control plan that coordinates the air control efforts of the other service and functional components.¹²

Although the JFACC is normally designated the airspace control authority, ownership of airspace by the other service or functional components is required because they simply do not fight in a functionally centralized fashion. For example, the Army-Air Force air-land battle concept and the Marine air ground task force (MAGTF) concept are combined arms concepts based on integration and teamwork. Also, the Navy's composite warfare concept integrates surface, subsurface and aerospace systems into a combined arms capability. The subordinate or service component commanders must integrate a growing array of fire support assets to decide a battle and shape the next one and they must have adequate authority to

¹² U.S. Joint Chiefs of Staff. Doctrine for Joint Airspace Control in the Combat Zone. Joint Publication 3-52 Washington, D.C.:1995, III-5.

direct actions necessary to accomplish their missions.¹³ The final coordination draft of Joint Publication 3-09 recognizes that, "All component commanders must have the freedom to use airspace to achieve the joint force commander's objectives and must have maximum flexibility to use assets (organic and joint) within that airspace."¹⁴

While the other service or functional commanders must have freedom of action, the joint force commander's J-3 JFE must be able to quickly establish priority of airspace use in order for the component commanders to employ the operational concepts of dominant maneuver and precision engagement. This is not to imply that the J-3 or JFE should become the airspace control authority. The functions and responsibilities of the JFACC, airspace control authority and area air defense commander must be integrated in order to unite joint air operations with joint airspace control and joint air defense operations. It does mean that the J-3 or JFE should establish priority of use either through establishment of fire support coordination measures or component boundaries. Many argue that the JFACC provides centralized command and decentralized control of the air effort for the joint force commander and that the J-3 or JFE involvement would be detrimental to unity of effort. The debate revolves around how the joint force commander establishes priority of air effort. Should the priority of air effort be established through the J-3 or JFE, or through the JFACC? If the J-3 or the JFE gains responsibility of the JIPTL then it follows that the J-3 or JFE should establish priority of airspace use.

¹³ Whitlow, John L. "Who's in Charge." Joint Force Quarterly, Summer 1994, 64.

¹⁴ U.S. Joint Chiefs of Staff. Doctrine for Joint Fire Support, Final Coordination Draft. Washington, D.C. 23 December 1997, III-12.

Airspace C⁴I systems

The joint commander's staff must have the tools to integrate the service and component capabilities. One of those tools is an airspace management system that facilitates fire support coordination. It is in fire support coordination and airspace management that information superiority and the complete interoperability of weapons as well as C⁴ISR systems will enable our forces to take advantage of the full array of their capabilities.

Each service operates airspace control systems that are linked via communications, standardized procedures and liaison with the airspace control authority, normally the JFACC. Great strides have been made to integrate the different air command and control systems of the services. Many Army, Air Force, Navy and Marine air defense radar, air defense command and control centers and air command and control systems are compatible and can be linked to share real time information about enemy and friendly forces. However, the interface between aviation and ground fire support assets at the Army Corps, Marine Expeditionary Force, and Naval amphibious task force level rely on procedural control of aviation assets in the respective areas of responsibilities.

The command and control facilities that provide procedural control of aviation assets are not supported by radar or other sensors to provide the detail of information about friendly and enemy forces necessary for the joint force commander and the service or functional component commanders to achieve dominate battlespace awareness. Yet the most dramatic increase in the use of airborne platforms will occur in the service and functional component areas of responsibility. Clearly this is one area in which a much greater investment of information technology will be required.

Each service or functional component must have aviation command and control centers that integrate with surface fire support coordination centers systems and are completely interoperable with each other. New systems must be developed that will see all friendly and enemy airborne systems. Every friendly airborne system must have an identification friend or foe (IFF) device. An integrated interoperable aviation and surface fires support command and control centers at all levels will facilitate dominant maneuver, precision engagement, focused logistics and full dimensional protection. All of this information must be distributed to multiple locations simultaneously.

With regard to joint fire support coordination, the JFE and the components providing and receiving the fire support must share this information. In the event another component's airspace will be used, an integrated interoperable command and control system will facilitate the required coordination. In this way the JFE will be able to integrate fires of all components, coordinate the airspace for conducting those fires and facilitate precision engagement across service or functional component lines.

Some have argued that the advanced field artillery tactical data system (AFATDS) is the "Fire Support Window to the 21st Century" and the solution for many of the fire support coordination and integration requirements of *Joint Vision 2010*. AFATDS is a state-of-the-art, multi-service battlefield management and decision support system that supports the joint force commander and component commanders at all levels of planning, delivery and coordination of supporting arms. It is compatible with each service component's C⁴I system and the global command and control system. AFATDS also provides access to national, strategic and tactical sensors to build databases and help identify potential targets.¹⁵

¹⁵ Boutelle, Steven W. and Ronald Filak. "AFATDS: The Fire Support Window to the 21st Century." Joint Force Quarterly. Spring 1996, 16-21.

Although AFATDS provides commanders and fire support coordinators with an enormous leap in capability and interoperability, a complete accounting of friendly manned and unmanned airborne platforms is still missing. When battlespace awareness in all dimensions is integrated with the AFATDS, fire support coordinators at all levels of command and in each of the components can begin to achieve the full potential of *joint Vision 2010* operational concepts.

Conclusion

Joint Vision 2010 operational concepts are attainable if we develop coherent joint doctrine and completely interoperable weapons as well as C⁴ISR systems. Developing coherent joint doctrine that allows component commanders to establish priority of fires, apportions the fire support assets and airspace to prosecute those targets is the first requirement. With coherent doctrine in place we can leverage emerging technologies to achieve *Joint Vision 2010*. While we are developing new doctrine and capitalizing on fresh technology, we must avoid the trap of invariably organizing our forces along functional lines since all of the service and functional components integrate fires and maneuver throughout the mediums of air, land and sea. Each service or component commander should have the authority to establish priority of fires, sufficient battlespace to integrate fires and maneuver and the necessary fire support assets to accomplish his assigned mission in his area of operations. One concrete step in this direction would be to come to agreement on Joint Publication 3-09, *Doctrine for Joint Fire Support*, and the role of the J-3 or JFE. The J-3 or JFE should have the authority and capability to develop the JIPTL and prioritize airspace use as well.

Building service or component airspace command and control systems that provide the necessary level of detail about all friendly and enemy airborne platforms will be very expensive, but must become an acquisition priority if *Joint Vision 2010* operational concepts are to become reality. Historically, command and control systems acquisition programs have a lower priority than do weapon systems programs. Today's era of constrained defense budgets is no exception. Currently the services are focusing on replacing aging weapon systems. The Chairman of the Joint Chiefs of Staff and the commanders in charge of the combatant commands must take the lead in this area. Through the joint requirements oversight council and the joint warfighting capability assessment process the Chairman and combatant commanders can provide appropriate priority to joint and service procurement programs.

BIBLIOGRAPHY

Books

Gordon, Michael and Bernard Trainor. The General's War, the Inside Story of the Conflict in the Gulf. Boston: Little, Brown and Company, 1995.

Periodicals

Ales, Ricky, "Air Power's Battlespace." Field Artillery, May – June 1996, 10-13.

Boutelle, Steven, and Ronald Filak. "AFATDS: The Fire Support Window to the 21st Century" Joint Force Quarterly, Spring 1996, 16-21.

DiFronzo, Vincent P. "Unity of Command—Countering Aircraft and Missile Threats." Joint Force Quarterly, Spring 1996, 29-35.

Garner, Jay M. "Force Projection TOC: A Command and Control Solution." Air Defense Artillery, November – December 1995, 12-15.

Krulak, Charles C. "Doctrine for Joint Force Integration." Joint Force Quarterly, Winter 1995-96, 20-23.

Linn, Thomas. "Joint Operations: The Marine Perspective." Joint Force Quarterly, Winter 1995-96, 16-18.

McKearney, Terry J. "Rethinking the Joint Task Force." Proceedings, November 1994, 54-57.

Reimer, Dennis, and Ronald Fogleman. "Joint Warfare and the Army-Air Force Team." Joint Force Quarterly, Autumn 1996, 9-15.

Sheehan, John J. "Next Steps in Joint Force Integration." Joint Force Integration, Autumn 1996, 41-47.

Whitlow, John L. "Who's in Charge?" Joint Force Quarterly, Summer 1994, 64-70.

U.S. Government Publications

Joint Warfighting Center. JWFC JFFC Study. Norfolk, VA: 1997.

U.S. Department of the Air Force. Global Reach Global Power, The Evolving Air Force Contribution to National Security. Washington, D.C.: 1992.

- U.S. Department of the Army. Decisive Victory, America's Power Projection Army. Washington, D.C.: 1994.
- U. S. Department of the Navy, U.S. Marine Corps. Concepts and Issues 98. Washington D.C.: 1998.
- U.S. Department of the Navy, U.S. Marine Corps. Operational Maneuver From the Sea. Washington D.C.: 1997.
- U.S. Department of the Navy, U.S. Marine Corps. Supporting Arms in Amphibious Operations. NWP 22-2/FMFM 1-7. Norfolk, VA :1993.
- U.S. Department of the Navy, U.S. Marine Corps. Warfighting. FMFM-1. Washington D. C.: 1989.
- U.S. Joint Chiefs of Staff. Command and Control for Joint Air Operations. Joint Publication 3-56.1. Washington D.C.: 1994.
- U.S. Joint Chiefs of Staff. Compendium of Joint Publications. Joint Publication 1-01.1. Washington D.C.: 1995.
- U.S. Joint Chiefs of Staff. Concept for Future Joint Operations, Expanding Joint Vision 2010. Washington D.C.: 1997.
- U.S. Joint Chiefs of Staff. Doctrine for Command, Control, Communications, and Computer C⁴) Systems Support to Joint Operations. Joint Publication 6-0. Washington D.C. 1995.
- U.S. Joint Chiefs of Staff. Doctrine for Joint Airspace Control in the Combat Zone. Joint Publication 3-52. Washington D.C.: 1995.
- U.S. Joint Chiefs of Staff. Doctrine for Joint Fire Support. Joint Publication 3-09 (Final Coordination Draft. Washington D.C.: 1997.
- U.S. Joint Chiefs of Staff. Doctrine for Joint Operations. Joint Publication 3-0. Washington D.C.: 1995.
- U.S. Joint Chiefs of Staff. Joint Vision 2010. Washington D.C. 1995.
- U.S. Joint Chiefs of Staff. Joint Warfare of the Armed Forces of the United States. Joint Publication 1. Washington D.C.: 1995.
- U.S. Joint Chiefs of Staff. Unified Action Armed Forces. Joint Publication 0-2. Washington D.C.: 1995.

Unpublished Reports

Barry II, Robert. "Who's Zooming Who?" Joint Doctrine and the Army – Air Force Debate Over the FSCL. Fort Leavenworth, KS: U.S. Army command and General Staff College, 1994.

Dingess, Brian D. Theater Airspace Management: Integration by Phasing Control. Newport, RI: Naval War College, 1992.

Fearn, William R. Joint Force Fires Coordination: Towards a Joint Force Answer. Newport, RI: Naval War College, 1997.

Hunter, Jonathan B. Joint Operational Targeting: Who's in Charge; CINC, JFACC, Or JTCB? Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1992.